MID 044 202 420

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

October 16, 1985

TO: Ben Okumabua, Supervisor, Detroit District
Hazardous Waste Division

FROM: Terry McNiel, Technical Services Section
Hazardous Waste Division

SUBJECT: Ford-Sterling Axle Plant - Ertec Subpart F Inspection

The subject facility was scheduled for an inspection on September 4, 1985 to determine compliance with 40 CFR 265, Subpart F requirements. Based on conversations with Mr. Jerry Amber, SSECOS, I was advised that the plant had no wells or groundwater monitoring system. The site was therefore not visited and the inspection form filled out in the office to reflect that conversation and the facility's status.

If there are any questions, please call.

Attachment
cc: J. Bohunsky/C&E File

Office of the General Counsel

Ford Motor Company
The American Road
Dearborn, Michigan 48121

August 27, 1985

Thomas Daggett, Esq.
Office of the Regional Counsel
United States Environmental
Protection Agency
Region 5
230 South Dearborn Street
Chicago, Illinois 60604

Re: Ford - Sterling

Dear Mr. Daggett:

Although I was advised by Rodger Field by telephone before he left for vacation that Ford's technical staff would be shortly receiving the technical details of what groundwater monitoring the Agency wanted, as referenced in his letter of August 13, 1985 to me, that technical information has not been received. Please check with EPA's technical staff to see what has happened in this regard and please give me a call if you can regarding the status of this matter.

Thank you for your cooperation.

Very truly yours,

Norman W. Bernstein
Associate Counsel

cc: Rodger Field, Esq.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: FEB 20 1985

SUBJECT: Review of Ford's February 12, 1985, Letter

FROM: William E. Muno, P.E.
Supervisory Chemical Engineer

Wm. E. Muno

TO: Ronald Kolzow
MN/OH Unit

Acting on your request, I reviewed the above-referenced letter, and have the following comments:

1. The definition of electroplating used in the background document for the listing of F006 - wastewater treatment sludges from electroplating operations - in 40 CFR 261.31 is based upon the NPDES effluent guidelines for electroplating given at 40 CFR 413. There are several subparts in these guidelines for "electroplating" processes in which an electric current is not employed; for example, Subpart G - Electroless Plating. Thus, the presence of an electric current is not a prerequisite for a process to be included in "electroplating".

2. Subpart E - Coatings - applies to "chromating, phosphating or immersion plating on ferrous or non ferrous materials". It is important to note that the applicability section places no restrictions on the reason why the coating is applied to the base material. Thus, Ford's statement that the coating is applied for wear resistance only does not exclude it from the Coating Subcategory.

3. Ford admits that sludge from its wastewater treatment plant which treated the influent wastewater from the coating operation was disposed in its Northeast and Northwest lagoons until 1973. This sludge remains there today. Unless Ford can prove that its intent regarding the placement of the wastewater treatment plant sludge in the 2 lagoons was permanent disposal, the lagoons would be RCRA storage surface impoundments subject to all the 40 CFR 265 regulations.

4. The fact that the sludge samples in the 2 lagoons do not meet any of the 40 CFR 261 Subpart C general characteristics has no bearing on the sludge being a hazardous waste. It is a hazardous waste because the sludge meets the definition of F006 given in 40 CFR 261.31.

5. The argument that Ford makes in its summary is basicly an argument to support a delisting petition under 40 CFR 260.22. If Ford believes this argument will be sustained, it should pursue the delisting process.

One point worth noting in the Summary is Ford's comment about the low nickel concentration of the phosphating solution. This comment is not revelant to the hazardous waste determination because F006 is wastewater treatment sludge in which the metals are expected to be greatly concentrated. The nickel concentrations of the sludge in the lagoons are 65 and 52 ppm wet even after dilution with other non-electroplating treatment sludges.

HAZARDOUS WASTE COMPLIANCE AND ENFORCEMENT LOG - Major Facilities Only

1a. U.S. EPA ID # MID 044255420 3. Sterling (City)

1b. State ID #

2. Facility Name Ford – Sterling Axle Plant

4. Agency doing evaluation [5] S = State, J = Joint State/U.S. EPA, E = U.S. EPA (etc)

5a DATE OF INITIAL EVALUATION WHICH IS THE BASIS FOR THIS REPORT (may be date of a previous inspection or review or other) 9 (M) 4 (D) 85 (Y)

5b Inspection Comment: No wells or groundwater monitoring system

6. TYPE OF EVALUATION COVERED BY THIS REPORT (check one box only)

- [X] Compliance Evaluation Inspection
- [ ] Sampling Inspection
- [ ] Detailed Record Review
- [ ] Groundwater Inspection
- [ ] Follow-up Inspection (to enforcement action)
- [ ] Other

7. Date of the Evaluation in #6 if the Evaluation follows an Initial Evaluation (either blank or different from date in #5) M D Y

For State Use

8. Area & Class of Violation (enter number of violations by area and class) If no violation(s), enter a zero in the box(es)

Class of Violation	Groundwater	Closure/ Post Closure	Financial	Manifest	Compliance Schedule	Part B App	Other
I	See 5b.						
II							
III							

9. Enforcement Action (Listing must include Class I violations) (If there are only class II or III, enter the enforcement action for output tracking purposes.)

10. Comment (limited to 80 characters):

Violation Class (if not I)	Violation Area	Type of Action (enter code)	Date of Action	Compliance Date Scheduled	Compliance Date Actual	Status Code	Status Date	Resp* Agency	Free Field	Penalty (if any) Assessed	Penalty (if any) Collected

Ford Motor Co.
Sterling Axle Plant
MID 044255420
9-4-85
Inspector - McNiel
No Appendices

RCRA PART 265

SUBPART F

ERTEC INSPECTION FORMS

Based on conversations with Mr. Jerry Amber (Fomoco SSECOS) the facility was not visited. Mr. Amber advised that Ford-Sterling does not have any wells or monitoring systems as of 9-4-85.

APPENDIX - A

COMPLIANCE CHECKLIST FORMS

APPENDIX A-1

FACILITY INSPECTION FORM FOR COMPLIANCE WITH INTERIM STATUS STANDARDS COVERING GROUND-WATER MONITORING

Company Name: Ford - Sterling ; EPA I.D. Number: MID 044255420

Company Address: _____ ; Inspector's Name: McNiel

Company Contact/Official: Jerry Amber ; Branch/Organization: SSECOS

Title: Engineer ; Date of Inspection: 9-4-85

	Yes	No	Unknown	Waived
Type of facility: (check appropriately)				
a) surface impoundment	✓			
b) landfill				
c) land treatment facility				
d) disposal waste pile*				
Ground-Water Monitoring Program				
1. Was the ground-water monitoring program reviewed prior to site visit?	✓			
If "No",				
a) Was the ground-water program reviewed at the facility prior to site inspection?	—	—		
2. Has a ground-water monitoring program (capable of determining the facility's impact on the quality of groundwater in the uppermost aquifer underlying the facility) been implemented? 265.90(a)		✓		

*Listed separate from landfill for convenience of identification.

	Yes	No	Unknown	Waived
3. Has at least one monitoring well been installed in the uppermost aquifer hydraulically upgradient from the limit of the waste management area? 265.91(a)(1)	____	____		____
a) Are ground-water samples from the uppermost aquifer, representative of background ground-water quality and not affected by the facility (as ensured by proper well number, locations and depths?)	____	____		
4. Have at least three monitoring wells been installed hydraulically downgradient at the limit of the waste handling or management area? 265.91(a)(2)	____	____		
a) Do well number, locations and depths ensure prompt detection of any statistically significant amounts of HW or HW constituents that migrate from the waste management area to the uppermost aquifer?	____	____		____
5. Have the locations of the waste management areas been verified to conform with information in the ground-water program?	____	____	____	
a) If the facility contains multiple waste management components, is each component adequately monitored?	____	____		
6. Do the numbers, locations, and depths of the ground-water monitoring wells agree with the data in the ground-water monitoring system program? If "No", explain discrepancies.	____	____	____	
7. Well completion details. 265.91(c)				
a) Are wells properly cased?	____	____	____	
b) Are wells screened (perforated) and packed where necessary to enable sampling at appropriate depths?	____	____	____	
c) Are annular spaces properly sealed to prevent contamination of ground-water?	____	____	____	

	Yes	No	Unknown
c) Were ground-water surface elevations determined at each monitoring well each time a sample was taken? 265.92(e)	____	____	
d) Were the ground-water surface elevations evaluated annually to determine whether the monitoring wells are properly placed? 265.93(f)	____	____	
e) If it was determined that modification of the number, location or depth of monitoring wells was necessary, was the system brought into compliance with 265.91(a)? 265.93(f)	____	____	
10. Has an outline of a ground-water quality assessment program been prepared? 265.93(a)*	____	____	
a) Does it describe a program capable of determining:			
1) Whether hazardous waste or hazardous waste constituents have entered the ground water?	____	____	
2) The rate and extent of migration of hazardous waste or hazardous waste constituents in ground water?	____	____	
3) Concentrations of hazardous waste or hazardous waste constituents in ground water?	____	____	
b) After the first year of monitoring, have at least four replicate measurements of each indicator parameter been obtained for samples taken for each well? 265.93(b)	____	____	
1) Were the results compared with the initial background means from the upgradient well(s) determined during the first year?	____	____	
(i) Was each well considered individually?	____	____	
(ii) Was the Student's t-test used (at the 0.01 level of significance)?	____	____	
2) Was a significant increase (or pH decrease as well) found in the:			
(i) Upgradient wells	____	____	
(ii) Downgradient wells	____	____	
If "Yes", Compliance Checklist A-2 must also be completed.			

*See note Page 2-10

	Yes	No	Unknown
8. Has a ground-water sampling and analysis plan been developed? 265.92(a)	____	____	____
a) Has it been followed?	____	____	____
b) Is the plan kept at the facility?	____	____	____
c) Does the plan include procedures and techniques for:			
1) Sample collection?	____	____	
2) Sample preservation?	____	____	
3) Sample shipment?	____	____	
4) Analytical procedures?	____	____	
5) Chain of custody control?	____	____	
9. Are the required parameters in ground-water samples being tested quarterly for the first year? 265.92(b) and 265.92 (c)(1)	____	____	
a) Are the ground-water samples analyzed for the following:			
1) Parameters characterizing the suitability of the ground-water as a drinking water supply? 265.92(b)(1)	____	____	
2) Parameters establishing ground-water quality? 265.92(b)(2)	____	____	
3) Parameters used as indicators of ground-water contamination? 265.92(b)(3)	____	____	
(i) For each indicator parameter are at least four replicate measurements obtained at each upgradient well for each sample obtained during the first year of monitoring? 265.92(c)(2)	____	____	
(ii) Are provisions made to calculate the initial background arithmetic mean and variance of the respective parameter concentrations or values obtained from the upgradient well(s) during the first year? 265.92(c)(2)	____	____	
b) For facilities which have completed first year ground-water sampling and analysis requirements:			
1) Have samples been obtained and analyzed for the ground-water quality parameters at least annually? 265.92(d)(1)	____	____	
2) Have samples been obtained and analyzed for the indicators of ground-water contamination at least semi-annually? 265.92(d)(2)	____	____	

	Yes	No	Unknown
11. Have records been kept of analyses for parameters in 265.92(c) and (d)? 265.94(a)(1)	____	____	
12. Have records been kept of ground-water surface elevations taken at the time of sampling for each well? 265.94(a)(1)	____	____	
13. Have records been kept of required elevations in 265.93(b)? 265.94(a)(1)	____	____	
14. Have the following been submitted to the Regional Administrator 265.94(a)(2) :*			
a) Initial background concentrations of parameters listed in 265.92(b) within 15 days after completing each quarterly analysis required during the first year?	____	____	
b) For each well, have any parameters whose concentrations or values have exceeded the maximum contaminant levels allowed in drinking water supplies been separately identified?	____	____	
c) Annual reports including:			
1) Concentrations or values of parameters used as indicators of ground-water contamination for each well along with required evaluations under 265.93(b)?	____	____	
2) Any significant differences from initial background values in up-gradient wells separately identified?	____	____	
3) Results of the evaluation of ground-water surface elevations?	____	____	

*EPA will be proposing (Spring 1982) to replace this reporting requirement with an exception reporting system where reports will be submitted only where maximum contaminant levels or significant changes in the contamination indicators or other parameters are observed. EPA has delayed compliance stage for 14 a) above until August 1, 1982 (Federal Register, February 23, 1982, p.7841-7842) to be coupled with exception reporting in the interim.

APPENDIX A-2

INSPECTION COMPLIANCE FORM FOR A FACILITY WHICH MAY BE AFFECTING GROUND-WATER QUALITY

Company Name: _____; EPA I.D. Number: _____

Company Address: _____; Inspector's Name: _____

_____

_____

Company Contact/Official: _____; Branch/Organization: _____

Title: _____; Date of Inspection: _____

	Yes	No	Unknown
Type of facility: (Check appropriately)			
a) surface impoundment	____	____	
b) landfill	____	____	
c) land treatment facility	____	____	
d) disposal waste pile	____	____	
1. Have comparisons of ground-water contamination indicator parameters for the upgradient well(s) 265.93(b) shown a significant increase (or pH decrease as well) over initial background?	____	____	
a) If "Yes", has this information been submitted to the Regional Administrator according to 265.94(a)(2)(ii)?	____	____	
2. Have comparisons of indicator parameters for the downgradient wells 265.93(b) shown a significant increase (or pH decrease as well) over initial background?	____	____	
a) If "Yes", were additional ground-water samples taken for those downgradient wells where the significant difference was determined? 265.93(c)(2)	____	____	
1) Were samples split in two?	____	____	
2) Was the significant difference due to human (e.g., laboratory) error? (If "Yes", do not continue.)	____	____	

	Yes	No	Unknown
3. If significant differences were not due to error, was a written notice sent to the Regional Administrator within 7 days of confirmation?	____	____	
4. Within 15 days of notification of the Regional Administrator was a certified ground-water quality assessment plan submitted? 265.93(d)(2)*	____	____	
a) Does the plan specify 265.93(d)(3) :			
1) well information (specifics)	____	____	
(a) number?	____	____	
(b) locations?	____	____	
(c) depths?	____	____	
2) sampling methods?	____	____	
3) analytical methods?	____	____	
4) evaluation methods?	____	____	
5) schedule of implementation?	____	____	
b) Does the plan allow for determination of 265.93(d)(4) :			
1) Rate and extent of migration of hazardous waste or hazardous waste constituents?	____	____	
2) Concentrations of the hazardous waste or hazardous waste constituents?	____	____	
c) Is it indicated that the first determination was made as soon as technically feasible? 265.93(d)(5)	____	____	
1) Within 15 days after the first determination was a written report containing the assessment of ground-water quality submitted to the Regional Administrator?	____	____	
d) Was it determined that hazardous waste or hazardous waste constituents from the facility have entered the ground water?	____	____	
1) If "No", was the original indicator evaluation program, required by 265.92 and 265.93(b), reinstated?	____	____	
(a) Was the Regional Administrator notified of the reinstatement of program within 15 days of the determination? 265.93(d)(6)	____	____	

*See note Page 2-10

	Yes	No	Unknown
e) If it was determined that hazardous waste or hazardous waste constituents have entered the ground water 265.93(d)(7) :			
1) For facilities where program was implemented prior to final closure, are determinations of hazardous waste or hazardous waste constituents continued on a quarterly basis? (If program was implemented during the post-closure care period, determinations made in accordance with the ground-water quality assessment plan may cease after the first determination.)	____	____	
(a) Were subsequent ground-water quality reports submitted to the Regional Administrator within 15 days of determination?	____	____	
2) Were records kept of the analyses and evaluations, specified in the ground-water quality assessment (throughout the active life of the facility)? 265.94(b)(1)	____	____	
(a) If a disposal facility, were(are) records kept throughout the post-closure period as well?	____	____	
f) Are annual reports submitted to the Regional Administrator containing the results of the ground-water quality assessment program? 265.94(b)(2)*	____	____	
1) Do the reports include the calculated or measured rate of migration of hazardous waste or hazardous waste constituents during the reporting period?	____	____	

*See note Page 4-3

APPENDIX A-3

INSPECTION COMPLIANCE FORM FOR DEMONSTRATING A WAIVER OF INTERIM STATUS REQUIREMENTS

Company Name: _____; EPA I.D. Number: _____

Company Address: _____; Inspector's Name: _____

_____

_____

Company Contact: _____; Branch/Organization: _____

Title: _____; Date of Inspection: _____

	Yes	No	Unknown
1. Is a written waiver demonstration kept at the site?	____	____	
2. Is the demonstration certified by a qualified geologist or geotechnical engineer? 265.90(c)	____	____	
3. Does the waiver demonstration establish:			
a) The potential for migration of hazardous waste or hazardous waste constituents from the facility to the uppermost aquifer? 265.90(c)(1)	____	____	
b) An evaluation of a water balance including:			
1) Precipitation?	____	____	
2) Evapotranspiration?	____	____	
3) Runoff?	____	____	
4) Infiltration? (including any liquid in surface impoundments)	____	____	
c) Unsaturated zone characteristics?	____	____	
1) Geologic materials?	____	____	
2) Physical properties?	____	____	
3) Depth to ground water?	____	____	

	Yes	No	Unknown
d) The potential for hazardous waste or hazardous waste constituents which may enter the uppermost aquifer to migrate to a water supply well or surface water, by evaluation of: 265.90(c)(2)			
1) Saturated zone characteristics, including:			
(a) Geologic materials?	____	____	
(b) Physical properties?	____	____	
(c) Rate of ground-water flow?	____	____	
2) Proximity of the facility to water supply wells or surface water?	____	____	

APPENDIX -B

GROUND-WATER MONITORING AND ALTERNATE SYSTEM
TECHNICAL INFORMATION FORM

APPENDIX B

GROUND-WATER MONITORING AND ALTERNATE SYSTEM TECHNICAL INFORMATION FORM

1.0 Background Data:

Company Name:_____; EPA I.D.#:_____

Company Address:_____

_____

_____

Inspector's Name:_____; Date:_____

1.1 Type of facility (check appropriately):

1.1.1 surface impoundment _____
1.1.2 landfill _____
1.1.3 land treatment facility _____
1.1.4 disposal waste pile _____

1.2 Has a ground-water monitoring system been established? (Y/N) _____

1.2.1 Is a ground-water quality assessment program outlined or proposed? (Y/N) _____

If Yes,

1.2.2 Was it reviewed prior to the site visit? (Y/N) _____

1.3 Has a ground-water quality assessment program been implemented or proposed at the site? (Y/N) _____

If yes, Appendix C, Ground-Water Quality Assessment Program Technical Information Form must be utilized also.

2.0 Regional/Facility Map(s)

2.1 Is a regional map of the area, with the facility delineated, included? (Y/N) _____

If yes,

2.1.1 What is the origin and scale of the map?_____

_____

2.1.2 Is the surficial geology adequately illustrated? (Y/N) _____

2.1.3 Are there any significant topographic or surficial features evident? (Y/N) _____

If yes, describe _____

_____

2.1.4 Are there any streams, rivers, lakes, or wet lands near the facility? (Y/N) _____

If yes, indicate approximate distances from the facility _____

_____

_____

2.1.5 Are there any discharging or recharging wells near the facility? (Y/N) _____

If yes, indicate approximate distances from the facility. _____

_____

_____

2.2 Is a regional hydrogeologic map of the area included? (This information may be shown on 2.1) (Y/N) _____

If yes:

2.2.1 Are major areas of recharge/dishcarge shown? (Y/N) _____

If yes, describe. _____

_____

_____

2.2.2 Is the regional ground-water flow direction indicated? (Y/N) _____

2.2.3 Are the potentiometric contours logical? (Y/N) _____
If not, explain. _____

_____

_____

2.3 Is a facility plot plan included? (Y/N) _____

2.3.1 Are facility components (landfill areas, impoundments, etc.) shown? (Y/N) _____

2.3.2 Are any seeps, springs, streams, ponds, or wetlands indicated? (Y/N) _____

2.3.3 Are the locations of any monitoring wells, soil borings, or test pits shown? (Y/N) _____

2.3.4 Is the facility a multi-component facility? (Y/N) _____

If yes:

2.3.4.1 Are individual components adequately monitored? (Y/N) _____

2.3.4.2 Is a Waste Management Area delineated? (Y/N) _____

2.4 Is a site water table (potentiometric) contour map included? (Y/N) _____

If yes,

2.4.1 Do the potentiometric contours appear logical based on topography and presented data? (Consult water level data) (Y/N) _____

2.4.2 Are groundwater flowlines indicated? (Y/N) _____

2.4.3 Are static water levels shown? (Y/N) _____

2.2.4 May hydraulic gradients be estimated? (Y/N) _____

2.4.5 Is at least one monitoring well located hydraulically upgradient of the waste management area(s)? (Y/N) _____

2.4.6 Are at least three monitoring wells located hydraulically downgradient of the waste management area(s)? (Y/N) _____

2.4.7 By their location, do the upgradient wells appear capable of providing representative ambient groundwater quality data? (Y/N) _____

If no, explain. _____

_____

_____

3.0 Soil Boring/Test Pit Details

3.1 Were soil borings/test pits made under the supervision of a qualified professional? (Y/N) _____

If yes,

3.1.1 Indicate the individual(s) and affiliation(s): _____

_____

_____

3.1.2 Indicate the drilling/excavating contractor, if known _____

_____

3.2 If soil borings/test pits were made, indicate the method(s) of drilling/excavating:

- Auger (hollow or solid stem) _____
- Mud rotary _____
- Air rotary _____
- Reverse rotary _____
- Cable tool _____
- Jetting _____
- Other, including excavation (explain) _____

_____

3.3 List the number of soil borings/test pits made at the site

3.3.1 Pre-existing _____

3.3.2 For RCRA compliance _____

3.4 Indicate borehole diameters and depths (if different diameters and depths use TABLE B-1).

3.4.1 Diameter: _____

3.4.2 Depth: _____

3.5 Were lithologic samples collected during drilling? (Y/N) _____

If yes,

3.5.1 How were samples obtained? (Check method(s))

- Split spoon _____
- Shelby tube, or similar _____
- Rock coring _____
- Ditch sampling _____
- Other (explain) _____

_____

3.5.2 At what interval were samples collected?_____

_____

3.5.3 Were the deposits or rock units penetrated described? (boring logs, etc.) (Y/N) _____

3.6 If test pits were excavated at the site, describe procedures._____

_____

_____

4.0 Well Completion Detail

4.1 Were the wells installed under the supervision of a qualified professional? (Y/N) _____

If yes:

4.1.1 Indicate the individual and affiliation, if known_____

_____

_____

4.1.2 Indicate the well construction contractor, if known_____

_____

_____

4.2 List the number of wells at the site

4.2.1 Pre-existing _____

4.2.2 For RCRA Compliance _____

4.3 Well construction information (fill out INFORMATION TABLE B-2)

4.3.1 If PVC well screen or casing is used, are joints (couplings):

- Glued on _____
- Screwed on _____

4.3.2 Are well screens sand/gravel packed? (Y/N) _____

INFORMATION TABLE B-1

BORING NO.	DEPTH	DIAMETER

4.3.3 Are annular spaces sealed? (Y/N) _____

If yes, describe:

- bentonite slurry _____
- Cement grout _____
- Other (explain) _____

_____

- Thicknesses of seals _____

4.3.4 If "open hole" wells, are the cased portions sealed in place? (Y/N) _____

If yes, describe how: _____

_____

_____

4.3.5 Are there cement surface seals? (Y/N) _____

If yes,

- How thick? _____

4.3.6 Are the wells capped? (Y/N) _____

If yes,

- Do they lock? (Y/N) _____

4.3.7 Are protective standpipes cemented in place? (Y/N) _____

4.3.8 Were wells developed? (Y/N) _____

If yes, check appropriate method(s):

- Air lift pumping _____
- Pumping and surging _____
- Jetting _____
- Bailing _____
- Other (explain) _____

_____

5.0 Aquifer Characterization

5.1 Has the extent of the uppermost saturated zone (aquifer) in the facility area been defined? (Y/N) _____

If yes,

5.1.1 Are soil boring/test pit logs included? (Y/N) _____

5.1.2 Are geologic cross-sections included? (Y/N) _____

INFORMATION TABLE B-2

	WELL NO.						
	GROUND ELEVATION						
	TOTAL DEPTH						
WELL CASING	TYPE MATERIAL						
	DIAMETER						
	LENGTH						
	STICK-UP						
	TOP ELEVATION						
	BOTTOM ELEVATION						
WELL SCREEN	DEPTH TOP/BOTTOM						
	TYPE MATERIAL						
	DIAMETER						
	LENGTH						
	SLOT SIZE						
	TOP ELEVATION						
	BOTTOM ELEVATION						
OPEN HOLE OR SAND/GRAVEL PACK	DEPTH TOP/BOTTOM						
	DIAMETER						
	LENGTH						
	TOP ELEVATION						
	BOTTOM ELEVATION						

5.2 Is there evidence of confining (low permeability) layers beneath the site? (Y/N) _____

If yes,

5.2.1 Is the areal extent and continuity indicated? (Y/N) _____

5.2.2 Is there any potential for saturated conditions (perched water) to occur above the uppermost aquifer? (Y/N) _____

If yes, give details: _____

_____

_____

a) Should or is this perched zone being monitored? (Y/N) _____

Explain _____

_____

5.2.3 What is the lithology and texture of the uppermost saturated zone (aquifer)? _____

_____

_____

5.2.4 What is the saturated thickness, if indicated? _____

_____

5.3 Were static water levels measured? (Y/N) _____

If yes,

5.3.1 How were the water levels measured (check method(s)).

- Electric water sounder _____
- Wetted tape _____
- Air line _____
- Other (explain) _____

_____

5.3.2 Do fluctuations in static water levels occur? (Y/N) _____

If yes,

5.3.2.1 Are they accounted for (e.g. seasonal, tidal, etc.)? (Y/N) _____

If yes, describe: _____

_____

_____

5.3.2.2 Do the water level fluctuations alter the general ground-water gradients and flow directions? (Y/N) _____

If yes,

5.3.2.3 Will the effectiveness of the wells to detect contaminants be reduced? (Y/N) _____

Explain _____

_____

_____

5.3.2.4 Based on water level data, do any head differentials occur that may indicate a vertical flow component in the saturated zone? (Y/N) _____

If yes, explain _____

_____

_____

5.4 Have aquifer hydraulic properties been determined? (Y/N) _____

If yes,

5.4.1 Indicate method(s):

- Pumping tests _____
- Falling/constant head tests _____
- Laboratory tests (explain) _____

_____

_____

5.4.2 If determined, what are the values for:

- Transmissivity _____
- Storage coefficient _____
- Leakage _____
- Permeability _____
- Porosity _____
- Specific capacity _____

5.4.3 In cases where several tests were undertaken, were discrepancies in the results evident? (Y/N) _____

If yes, explain _____

_____

5.4.4 Were horizontal ground-water flow velocities determined? (Y/N) _____

If yes, indicate rate of movement _____

_____

6.0 Well Performance

6.1 Are the monitoring wells screened in the uppermost aquifer? (Y/N) ____

6.1.1 Is the full saturated thickness screened? (Y/N) ____

6.1.2 For single completions, are the intake areas in the: (check appropriate levels)

- Upper portion of the aquifer ____
- Middle of the aquifer ____
- Lower portion of the aquifer ____

6.1.3 For well clusters, are the intake areas open to different portions of the aquifer? (Y/N) ____

6.1.4 Do the intake levels of the monitoring wells appear to be justified due to possible contaminant density and groundwater flow velocity? (Y/N) ____

7.0 Ground-Water Quality Sampling

7.1 Is a sampling (groundwater quality) program and schedule included? (Y/N) ____

7.2 Are sample collection field procedures clearly outlined? (Y/N) ____

7.2.1 How are samples obtained: (check method(s))

- Air lift pump ____
- Submersible pump ____
- Positive displacement pump ____
- Centrifugal pump ____
- Peristaltic or other suction-lift pump ____
- Bailer ____
- Other (describe) _____

_____

7.2.2 Are all wells sampled with the same equipment and procedures? (Y/N) ____

If no, explain _____

_____

_____

7.2.3 Are adequate provisions included to clean equipment after sampling to prevent cross-contamination between wells? (Y/N) ____

7.2.4 Are organic constituents to be sampled? (Y/N) _____

If yes,

7.2.4.1 Are samples collected with equipment to minimize absorption and volatilization? (Y/N) _____

If yes,

Describe equipment _____

_____

_____

8.0 Sample Preservation and Handling

8.1 Have appropriate sample preservation and preparation procedures been followed (filtration and preservation where appropriate)? (Y/N) _____

8.2 Are samples refrigerated? (Y/N) _____

8.3 Are EPA recommended sample holding period requirements adhered to? (Y/N) _____

8.4 Are suitable container types used? (Y/N) _____

8.5 Are provisions made to store and ship samples under cold conditions (ice packs, etc.)? (Y/N) _____

8.6 Is a chain of custody control procedure clearly defined? (Y/N) _____

8.7 Is a specific chain of custody form illustrated? (Y/N) _____

If yes,

8.7.1 Will this form provide an accurate record of sample possession from the moment the sample is taken until the time it is analyzed? (Y/N) _____

9.0 Sample Analysis and Record Keeping

9.1 Is sample analysis performed by a qualified laboratory? (Y/N) _____

Indicate lab _____

9.2 Are analytical methods described in the records? (Y/N) _____

9.2.1 Are analytical methods acceptable to EPA? (Y/N) _____

9.3 Are the required drinking water suitability parametters tested for? (Y/N) _____

9.4 Are the required groundwater quality parameters tested for? (Y/N) _____

9.5 Are the required groundwater contamination indicator parameters tested for? (Y/N) _____

9.6 Are any analytical parameters determined in the field? (Y/N) _____

Identify:

- pH _____
- Temperature _____
- Specific conductance _____
- Other (describe) _____

_____

9.7 Is a plan included to record information about each sample collected during the groundwater monitoring program? (Y/N) _____

9.7.1 Are field activity logs included? (Y/N) _____

9.7.2 Are laboratory results included? (Y/N) _____

9.7.3 Are field procedures recorded? (Y/N) _____

9.7.4 Are field parameter determinations included? (Y/N) _____

9.7.5 Are the names and affiliation of the field personnel included? (Y/N) _____

9.8 Are statistical analyses planned or shown for all water quality results where necessary? (Y/N) _____

9.8.1 Is an analysis program set-up which adheres to EPA guidelines? (Y/N) _____

9.8.2 Is Student's t-test utilized? (Y/N) _____
If other evaluation procedure used, identify _____

_____

9.8.3 Are provisions made for submitting analysis reports to the Regional Administrator? (Y/N) _____

10.0 Site Verification

10.1 Plot Plan indicating the locations of various facility components, ground-water monitoring wells, and surface waters? (Y/N) _____

10.1.1 Is the plot plan used for the inspection the same as in the monitoring program plan documentation? (Y/N) _____

If not, explain _____

_____

10.1.2 Are all of the components of the facility identified during the inspection addressed in the monitoring program documentation? (Y/N) _____

If not, explain _____

_____

10.1.3 Are there any streams, lakes or wetlands on or adjacent to the site? (Y/N) _____

If yes, indicate distances from waste management areas _____

_____

_____

10.1.4 Are there any signs of water quality degradation evident in the surface water bodies? (Y/N) _____

If yes, explain _____

_____

_____

10.1.5 Is there any indication of distressed or dead vegetation on or adjacent to the site? (Y/N) _____

If yes, explain _____

_____

_____

10.1.6 Are there any significant topographic or surficial features on or near the site (e.g., recharge or discharge areas)? (Y/N) _____

If yes, explain _____

_____

10.1.7 Are the monitor well locations and numbers in agreement with the monitoring program documentation? (Y/N) _____

If no, explain _____

_____

10.1.7.1 Were locations and elevations of the monitor wells surveyed into some known datum? (Y/N) _____

If not, explain _____

_____

10.1.7.2 Were the wells sounded to determine total depth below the surface? (Y/N) _____

If not, explain _____

_____

10.1.7.3 Were discrepancies in total depth greater than two feet apparent in any well? (Y/N) _____

If yes, explain _____

_____

10.1.8 Was ground water encountered in all monitoring wells? (Y/N) _____

If not, indicate which well(s) were dry _____

_____

10.1.9 Were water level elevations measured during the site visit? (Y/N) _____

If yes, indicate well number and water level elevation _____

_____

If not, explain _____

_____

APPENDIX - C

GROUND-WATER QUALITY ASSESSMENT PROGRAM
INFORMATION FORM

APPENDIX C

GROUND-WATER QUALITY ASSESSMENT PROGRAM
INFORMATION FORM

Company Name:_____; EPA I.D.#:_____

Company Address:_____

_____

_____

Inspector's Name:_____; Date:_____

1.0 Background

1.1 List the constituents (contaminants) originating from the waste management area: (use separate sheet if necessary_____

_____

_____

1.2 Have the concentrations of the hazardous waste or hazardous waste constituents shown significant increases in:

- upgradient monitoring wells (Y/N) _____
- downgradient monitoring wells (Y/N) _____

1.2.1 List or indicate on a map, the wells which have shown significant increases: (use separate sheet if necessary)_____

_____

_____

1.3 Were the significant increases in contaminant concentration determined through the use of the student's t-Test? (Y/N) _____

If no,

1.3.1 Explain procedure used_____

_____

_____

1.4 Has the possibility of error (e.g., laboratory) been eliminated? (Y/N) _____

1.4.1 Explain_____

_____

_____

2.0 Contaminant Characteristics

2.1 If available, list the chemical and physical properties of the contaminants which have been detected in the ground water: (density, solubility, etc.). Include on a separate sheet if list is extensive _____

_____

_____

3.0 Implementation of the Assessment Program

3.1 Has the extent of the migration of hazardous waste or hazardous waste constituents been determined? (Y/N) _____

If yes,

3.1.1 Indicate how: (check appropriate method(s))

- additional ground-water monitoring wells _____
- geophysical methods _____
- computer simulation _____
- other, explain _____

_____

3.2 Were monitoring wells installed? (Y/N) _____

If yes,

3.2.1 Record monitoring well/peizometer completion data on INFORMATION TABLE C-1.

3.2.2 Were well clusters (nests) used or were wells with multiple intake areas constructed? Give details _____

_____

_____

3.2.3 Show the numbers and locations of the additional wells/peizometers on a site map.

3.2.4 Are the locations of the wells/piezometers justified in view of the water table or potentiometric surface map? (Y/N) _____
Give details _____

_____

_____

3.2.5 Are the depths of the monitoring wells/ piezometers justified due to the relative characteristics (e.g., densities) of the contaminants? (Y/N) _____
Give details _____

_____

_____

3.2.6 List any other methods (e.g., soil sample analysis) used to document the extent of the contamination. (use separate sheet if necessary) _____

_____

_____

3.3 Has the rate of contaminant migration been determined? (Y/N) _____

If yes, what is it and how was it determined? _____

_____

_____

3.3.1 Does the rate of migration differ for various contaminants? (Y/N) _____
Give details _____

_____

_____

3.3.2 If known, what is the cause (reason) of (for) this differential in migration rates? _____

_____

_____

INFORMATION TABLE C-1

	WELL NO.						
	GROUND ELEVATION						
	TOTAL DEPTH						
WELL CASING	TYPE MATERIAL						
	DIAMETER						
	LENGTH						
	STICK-UP						
	TOP ELEVATION						
	BOTTOM ELEVATION						
WELL SCREEN	DEPTH TOP/BOTTOM						
	TYPE MATERIAL						
	DIAMETER						
	LENGTH						
	SLOT SIZE						
	TOP ELEVATION						
	BOTTOM ELEVATION						
OPEN HOLE OR SAND/GRAVEL PACK	DEPTH TOP/BOTTOM						
	DIAMETER						
	LENGTH						
	TOP ELEVATION						
	BOTTOM ELEVATION						

APPENDIX - D

WAIVER DEMONSTRATION TECHNICAL INFORMATION FORM

APPENDIX D

WAIVER DEMONSTRATION TECHNICAL INFORMATION FORM

Company Name: _____; EPA ID.#: _____

Company Address: _____

_____

_____

Inspector's Name: _____; Date: _____

1.0 Site Characterization

Regional Map (U.S.G.S., 7.5 min. Topographic Quadrangle Map, or similar) showing facility location with water supply wells near the facility indicated.

1.0.1 Are there discharging wells near the facility? (Y/N) _____

If yes, give distances to wells _____

_____

1.0.1.1 Which aquifers in the vicintiy provide water supplies? _____

_____

1.0.1.2 What is the estimated withdrawal (diversion) rate from these aquifers? _____

_____

1.0.2 Are there any streams, rivers, or lakes near the facility? (Y/N) _____

1.0.2.1 If so, indicate approximate distances from the facility. _____

_____

1.1 Regional Hydrogeologic/Surficial Geologic Map

1.1.1 Is the surficial geology adequately illustrated? (Y/N) _____

1.1.2 Are areas of recharge/discharge shown? (Y/N) _____

1.1.3 Is regional groundwater flow direction indicated? (Y/N) _____

1.1.4 Are the water table or potentiometric contours logical? (Y/N) _____

1.2 Map of Facility (scale at least 1" = 200'), showing the locations of facility components (e.g., surface impoundments, and disposal areas), and groundwater monitoring wells, springs, seeps, streams, etc.

1.2.1 Is the facility a multi-component facility? (Y/N) _____

1.2.2 Are locations of test borings (or pits) and observation wells shown? (Y/N) _____

1.2.2.1 Are borings, pits, or wells located in or near the waste management area? (Y/N) _____

If yes,

1.2.2.2 Do the borings, pits, or wells appear to be of such number, and depth to adequately characterize the substrate? (Y/N) _____

Give brief detail _____

_____

_____

1.3 Boring Logs and Geologic Cross Sections

1.3.1 Are there logs of the borings or test pits? (Y/N) _____

1.3.2 How are the sub-surface materials described: (check as appropriate)

1.3.2.1 Unified Soil Classification System _____

1.3.2.2 U.S.D.A. Soil Classification System _____

1.3.2.3 Burmeister Classification System _____

1.3.2.4 Other (explain) _____

_____

1.3.3 Are geologic cross-sections included? (Y/N) _____

1.3.4 Is there evidence of confining (low permeability) layers beneath the facility? (Y/N) _____

2.0 Waste Characterization

2.1 Has the waste material been stabilized in any way to preclude the potential of leachate being generated? (Y/N) _____

If yes, briefly explain methods _____

_____

2.2 Have specially engineered features been incorporated into the facility design to minimize the migration of leachate? (Y/N) _____

If yes, briefly explain_____

_____

3.0 Water Balance

3.1 Is precipitation data included? (Y/N) _____

3.1.1 How is it tabulated? (check one)

- Daily _____
- Weekly _____
- Monthly _____
- Annually _____

3.1.2 Source of data (check one)

- U.S. Weather Service _____
- State Agency _____
- Other Source _____
  Identify _____

_____

3.1.3 Length of record, in years _____

3.1.4 Distance of measuring point from the facility _____

3.2 Is actual evapotranspiration (AET) data included? (Y/N) _____

3.2.1 Is the source of AET data indicated? (Y/N) _____

If yes, give reference_____

_____

3.3 Is run-off calculated? (Y/N) _____

3.3.1 Is the technique referenced? (Y/N) _____

If yes, give reference_____

_____

3.4 Is infiltration data included? (Y/N) _____

3.4.1 Is source of data referenced? (Y/N) _____

If yes, give reference_____

_____

3.5 Is there a positive net infiltration recorded? (Y/N) _____

If yes, how much? _____

4.0 Unsaturated Zone Characteristics

4.1 Has the applicant demonstrated that the unsaturated zone will isolate any waste derived leachate from the water table, chemically or physically? (Y/N) _____

Briefly describe mechanism(s) _____

_____

_____

4.2 Physical Properties

4.2.1 Has the applicant defined the unsaturated thickness and areal variability? (Y/N) _____

Briefly describe _____

_____

_____

4.2.2 Has the primary and secondary porosity (if any) of the unsaturated zone been determined? (Y/N) _____

Briefly describe _____

_____

4.2.3 Have hydraulic conductivity curves for each sediment type comprising the unsaturated zone been established? (Y/N) _____

4.2.4 Have textural analyses been performed? (Y/N) _____

4.2.5 Have bulk densities been estimated? (Y/N) _____

4.3 Chemical Properties

4.3.1 Has cation exchange been cited as an attenuation means? (Y/N) _____

If yes,

4.3.1.1 Type of clay _____

4.3.1.2 Percent of clay _____

4.3.1.3 Percent of organics _____

4.3.1.4 pH of materials _____

4.3.2 Have other attenuation mechanisms, if any, been adequately explained? (Y/N) _____

If yes, cite mechanism:

4.3.2.1 Biodegradation _____

4.3.2.2 Complexation _____

4.3.2.3 Precipitation _____

4.3.2.4 Chelation _____

4.3.2.5 Other _____

5.0 Saturated Zone Physical Characteristics

5.1 Have the saturated zone hydrologic properties been determined? (Y/N) _____

If yes, were pumping tests performed to determine (check appropriate determinations and give results)

5.1.1 Transmissivity _____

5.1.2 Hydraulic Conductivity _____

5.1.3 Storage Coefficient _____

5.1.4 Leakage _____

5.2 How many tests were performed? _____

5.2.1 The duration(s) of test(s) _____

5.2.2 The length(s) of the recovery test(s) _____

5.3 Were other insitu tests performed? (Y/N) _____

(check appropriate tests)

5.3.1 Falling head tests _____

5.3.2 Constant head tests _____

5.3.3 Packer tests _____

5.3.4 Other _____

Explain _____

_____

5.4 Was the saturated thickness determined? (Y/N) _____

5.5 Are static water level measurements included? (Y/N) _____

5.6 Is a site water table (equipotential) contour map included? (Y/N) _____

5.6.1 Does the contour map appear logical based on the presented data and topography? (Y/N) _____

5.6.2 Are groundwater flowlines indicated? (Y/N) _____

5.6.3 Are hydraulic gradients included? (Y/N) _____

5.6.4 Are flow velocities included? (Y/N) _____

5.7 Is there any indication of vertical flow in the saturated zone? (Y/N) _____

5.8 Saturated Zone Chemical Properties of Ground Water

5.8.1 Have water quality analyses been performed to establish background data? (Y/N) _____

5.8.2 Does background information indicate that the aquifer may be degraded in any way? (Y/N) _____

6.0 Computer Modeling

6.1 Was a computer simulation utilized in the demonstration? (Y/N) _____

Check appropriate model:

6.1.1 Mass transport _____

6.1.2 Flow model _____

6.2 Type of model? (check appropriate type)

6.2.1 Numerical _____

6.2.2 Analytic _____

6.2.3 Reference for model? _____

_____

_____

6.2.4 Does the data appear to warrant the use of modeling techniques? (Y/N) _____

If not, explain _____

_____

_____